

02/25/98

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UTILITY PATENT APPLICATION TRANSMITTAL <small>(Only for new nonprovisional applications under 37 CFR 1.53(b))</small>		Attorney Docket No.	0557-4308-2
		First Named Inventor or Application Identifier	
		0557-4308-2	
		Title	COMPUTER-BASED NETWORK PRINTING SYSTEM AND METHOD
APPLICATION ELEMENTS <i>See MPEP chapter 600 concerning utility application contents</i>		ADDRESS TO: Assistant Commissioner for Patents Box Patent Applications Washington, DC 20231	
1. <input checked="" type="checkbox"/> Fee Transmittal Form <i>(Submit an original, and a duplicate for fee processing)</i>		ACCOMPANYING APPLICATION PARTS	
2. <input checked="" type="checkbox"/> Specification [Total Pages 15]		6. <input type="checkbox"/> Assignment Papers (cover sheet & document(s))	
3. <input checked="" type="checkbox"/> Drawing(s) [Total Sheets 3]		7. <input type="checkbox"/> 37 CFR 3.73(b) Statement <input type="checkbox"/> Power of Attorney <i>(when there is an assignee)</i>	
4. Oath or Declaration [Total Pages] <ol style="list-style-type: none"> a. <input type="checkbox"/> Newly executed (original or copy) b. <input type="checkbox"/> Copy from a prior application (37 CFR 1.63(d)) <i>(for continuation/divisional with Box 17 completed)</i> <input type="checkbox"/> <small>[Note Box 5 below]</small> i. <input type="checkbox"/> <u>DELETION OF INVENTOR(S)</u> Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b). 		8. <input type="checkbox"/> English Translation Document (<i>if applicable</i>)	
5. <input type="checkbox"/> Incorporation By Reference (<i>useable if Box 4b is checked</i>) The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.		9. <input type="checkbox"/> Information Disclosure <input type="checkbox"/> Copies of IDS Citations Statement (IDS)/PTO-1449	
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16. Amend the specification by inserting before the first line the sentence: This application is a <input type="checkbox"/> Continuation <input type="checkbox"/> Division <input type="checkbox"/> Continuation-in-part (CIP) of application Serial No. , filed on .			
17. CORRESPONDENCE ADDRESS <p>OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. FOURTH FLOOR 1755 JEFFERSON DAVIS HIGHWAY ARLINGTON, VIRGINIA 22202 (703) 413-3000 FAX NO. (703) 413-2220</p>			

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):

Serial No: NEW APPLICATION

Filing Date: HEREWITH

Title: COMPUTER-BASED NETWORK PRINTING SYSTEM AND METHOD
Fee TransmittalAssistant Commissioner For Patents
Washington, D.C. 20231

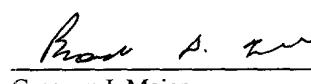
CLAIMS	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
	TOTAL CLAIMS	8 -20=	0	X \$22=	\$0.00
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	MULTIPLE DEPENDENT CLAIMS (if applicable)			+ \$270=	\$
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TITLE OF THE INVENTION

COMPUTER-BASED NETWORK PRINTING SYSTEM AND METHOD

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BACKGROUND OF THE INVENTION

Field of the Invention:

The present invention relates to a computer-based network printing method and system, which enables printing from a printer connected, directly or indirectly, in a network system to a host computer, terminal computers and other printers.

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Description of the Related Art:

Computer networks and printers that connect to the network are not new. These network print systems include a host computer, terminal computers and printers, all of which are interconnected by way of a computer communications network. The host computer manages the terminal computers that are used by respective network users. The users are able to access various printers because the printers are connected to the network and are thus, common network resources. There are various places where the printers may be located. For example, all printers may be located in the same place, different places in one building, or distributed throughout different buildings.

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As recognized by the present inventor, conventional network print systems have problems. For example, a user must select one of the network printers as a prerequisite for printing. Therefore, the print output is directed to the selected printer and not another one of the available printers. Security is another problem. Conventional network printing systems

have a number of users with a number of printers, where the printed output of the respective printers are available for inspection by other users. Moreover, suppose a user prints a confidential documents on a selected printer, which is connected a network system, other user can observe, or extract, the contents of the printed document (inadvertently, or intentionally).

5 Japanese patent document, JLOP 4-48323 shows a print server, which has a stacker for stacking printed documents. In this print server, the stacker has a feature that allows the user to take the printed documents only when the user inputs a correct password. Thus, the only the user who has the proper password privilege can observe or extract the printed document.

10 However, in this conventional print server, the user can only retrieve the printed document from the selected printer, and therefore, cannot retrieve the document from another printer. Attempting to designate multiple or all printers for printing the document gives rise to a security problem.

15 SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to provide a novel computer-based network printing method and system which obviates the above-mentioned problems. A computer-based network print method and system according to the present invention enables a user to print documents from any printer connected to the system.

20 For that purpose, the present invention includes a printer having an operation unit and a host computer. The host computer receives image data to be printed send by a user by way of a terminal computer. The host computer stores the image data with a unique job number,

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sends the job number to the terminal computer and this terminal computer displays the job number to the user. The user may then enter the displayed job number on an operation unit of any printer selected by the user, and in response, the host computer downloads the stored image data associated with the inputted job number to the selected printer and the selected printer prints the document.

Furthermore, other users are prevented from breaching the confidentiality of the printed document because only the intended recipient (i.e., the user who originated print job) knows the user's password and job number and because the intended recipient is located at the printer and can "guard" the printed document from being viewed by other people. To this end, in this invention, a host computer or printer stores the password inputted by a user, and for printing, when the stored password and an inputted password match, documents are printed from the printer on which the user inputs the job number and password.

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BRIEF DESCRIPTION OF THE DRAWINGS

A more complete appreciation of the invention and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

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Fig. 1 is a block diagram of a network system using a network print system according to present invention;

Fig. 2 is a diagram of each block in Fig. 1 and an interface between each block; and

Fig. 3 is a flowchart of an operation of this network system including user operations

for the computer and the printer.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, wherein like reference numerals designate identical or
5 corresponding parts throughout the several views Fig. 1 is a block diagram of a computer-based network using a computer-based network print system according to present invention.

As illustrated the computer-based network system includes four computers for four users, two network servers, four printers, two print servers and one host computer. Of course other configurations are possible as well. In Fig. 1 two computers (101-102, and 103-104) are connected to each network servers 105 and 106. In turn, the two network servers 105 and 106 are connected to a host computer 113, which controls the entire network. The network servers 105 and 106 and the host computer 113 communicate with each other by a bus.

Also shown in Fig. 1 are two printer pairs (107-108, and 109-110) respectively connected to print servers 111 and 112. The two print servers 111 and 112 are connected to the host computer 113. The print servers 111 and 112 control printing according to authorization commands from the host computer 113, and the printers 107, 108, 109 and 110 work according under the control of the printer servers 111 and 112.

In this network system, four users (Users A-D, as identified in Fig. 1) send print information, in the form of image data, text data and so on, to the host computer 113 by way 20 of the network servers 105 and 106. Furthermore, each of the four users have complete control over which of the four printers 107, 108, 109 and 110, the user would like to effect the print operation. Control over selecting the printer is carried out by the user, who, by entering

on a keypad of the desired printer, the user's password and print job number. Alternatively, the user may simply enter the job number, if no passwords are required.

Fig. 2 is a diagram of each block in Fig. 1 and an interface between each block. The host computer 113 has a video and command data interface unit (not shown) that connects to the network server 105 and the print server 111. The network server 105 has a computer interface unit for connecting to the computer 101. The printer 107 has a video and command data interface for connecting to the print server 111, an image data processing unit for processing image data, a printer controller which has a CPU for controlling the printer apparatus, a ROM for storing a controlling program and a RAM for storing controlling data, an operation panel control unit for controlling an operational panel, on which the user may enter data and view displayed information.

The print server 111 receives data for example, a user password, a job number and an image data, from the host computer 113, and receives a job number and password inputted by user from the operation panel.

In this network system, data for printing is sent from the computer 101 to the network server 105, which processes the data and sends the processed data to the host computer 113. The host computer 113 matches a job number with the password (assigned to the user or established by the host computer) and the image data to be printed, as supplied from the computer 101 by way of the network server 105. The user is then free to go to any printer on the network and have the document printed therefrom. To this end, the user walks to a printer (e.g., printer 107) and inputs the job number and password on the printer's operation panel. Alternatively, the user need not be physically present, but send control commands to the

selected printer 107, identifying the password and job number, as if the user had entered this information on the printer's keypad. The selected printer 107 then requests the password and job number be verified by the host computer 113, by passing the password and job number provided by the user through the print server 111 to the host computer 113.

5 Fig. 3 is a flowchart of an operation of the present computer-based network system and includes user operations performed by the user on the computer terminal, operations performed by the network computer or host computer, and operations performed by the printer server or printer. The process begins in step S1 where a user employs the computer terminal to dispatch a print request message, with image data, to the network server. Next, in
10 step S2 the network server receives the print request signal, with image data, and sends a related message to the host computer. The host computer then registers the job number and password with the image data sent from the network computer. As part of step S2, the host computer sends the job number, password and the image data to the print server and also sends the job number and password to the computer display so the user can view the job number and password assigned by the host computer to the print job. Alternatively, the host computer only sends the job number, and the user merely uses a personal password, or no password at all.

15 The process then proceeds to step S3 where the print server registers the job number and password according to the information sent from the host computer. Alternatively, the job number and password are retained by the host computer and the print server remains passive and awaits the user to enter a job number and password on the printer's keypad, whereby the print server will relay the entered job number and password to the host

computer.

When the user actually makes the print request, the user inputs the job number and password on the keypad of any selected printer (step S4). The selected printer then sends this information to the print server, which in step S5 verifies that the inputted job number and password match that provided by the host computer. Alternatively, the host computer performs the verification. If the response to the inquiry in step S5 is affirmative, the process proceeds to step S6, where the selected printer prints the image data, and the process ends. However, if the response to the inquiry in step S5 is affirmative, the process proceeds to step S7 where the print server sends the inputted job number and password to the host computer, which performs a secondary verification in step S8 and sends a result message to the printer server. In step S9 the print server interprets the result message from the host computer, and determines conclusively whether the job number and password from entered by the user are the same as those originally assigned by the host computer. If the result of the inquiry in step S9 is negative, the printer displays an error message and the process ends. However, if the response to the inquiry in step S9 is positive, the process proceeds to step S11 where the image data is downloaded to the printer and the printer prints the document.

In the above-described computer-based network system, a user who sends a print signal is able to have the desired document from any printer connected to the network. Furthermore, the user may have the document printed with a reasonably high degree of certainty that the confidentiality of the document will not be compromised because only users who know the password and job number are able to activate the printing of the document at the selected printer.

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This invention may be conveniently implemented using a conventional general purpose digital computer or microprocessor programmed according to the teachings of the present specification, as will be apparent to those skilled in the computer art. Appropriate software coding can readily be prepared by skilled programmers based on the teachings of the present disclosure, as will be apparent to those skilled in the software art. The invention may also be implemented by the preparation of application specific integrated circuit or by interconnecting an appropriate network of conventional components, as will be readily apparent to those skilled in the art.

This application is based on Japanese patent application 9-058482 filed in the Japanese Patent Office on February 25,1997, the entire contents of which are hereby incorporated by reference.

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WHAT IS CLAIMED AS NEW AND IS DESIRED TO BE SECURED BY LETTERS

PATENT OF THE UNITED STATES IS:

1. A network print system comprising:

a computer terminal having,

5 a processor,

a computer user interface, and

a computer display, said processor being configured to produce a print request message in response to information provided through said computer user interface, said print request message containing image data;

10 a printer communicatively coupled to said computer terminal, said printer having a printer user interface with a data input device and a data display device; and

15 a host computer communicatively coupled to said printer and said computer terminal and configured to receive said print request message, said host computer having

a memory in which said image data is stored, and

20 a host computer processor configured to produce a job number associated with said print request message and send said job number to said computer, wherein

said computer terminal being configured to display on said display an indication of said job number provided by said host computer,

said host processor being configured to recognize when said job number is input to

25 said printer via said printer user interface and provide said image data to said printer for printing.

2. A network print system comprising:

a computer terminal having,

a processor,

a computer user interface configured to receive a password entered by a user,

and

5 a computer display, said processor being configured to produce a print request

message containing image data and said password;

a printer communicatively coupled to said computer terminal, said printer having a
printer user interface with a data input device and a data display device; and

a host computer communicatively coupled to said printer and said computer terminal,
and configured to receive said print request message, said host computer having

a memory in which said image data and said password are stored, and

a host computer processor configured to produce a job number associated with
said print request message, store said job number in said memory in association with said
image data and password, and send said job number to said computer terminal, wherein

15 said computer terminal being configured to display on said display an indication of
said job number provided by said host computer, and

said host processor being configured to recognize when said job number and password
are input to said printer via said printer user interface and provide said image data to said
printer for printing.

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3. A network print system comprising:

a computer terminal having,

a processor,

a computer user interface, and
a computer display, said processor being configured to produce a print request
message containing image data;

a printer coupled to said computer terminal, said printer having

5 a printer user interface with a data input device and a data display device, and
 a printer memory configured to hold a user password,

a host computer coupled to said printer and said computer terminal, and configured to
receive said print request message, said host computer having

a host computer memory in which said image data is stored, and

10 a host computer processor configured to produce a job number associated with
said print request message, store said job number in said host computer memory in
association with said image data, and send said job number to said computer terminal,
wherein

15 said computer terminal being configured to display on said display an indication of
said job number provided by said host computer,

at least one of said host computer and said printer being configured to determine if an
input data input through said printer user interface matches said job number and if so
providing said image data to said printer,

20 said printer being configured to determine whether a password input via said printer
user interface matches said password stored in said printer memory and if so printing a
document corresponding to said image data.

4. A secure method for printing a document in a network print system, comprising the

steps of:

receiving an image data at a first network terminal;

producing a print request message at said first network terminal and sending said print request message and said image data to a second network terminal;

5 storing in memory said image data and an associated job number at said second network terminal;

sending a reply message to said first network terminal from said second network terminal, said reply message including said associated job number;

displaying said associated job number at said first network terminal;

inputting a local print request message at said second network terminal, said local request message having an input job number; and

comparing said input job number with said associated job number and printing from said second network terminal a document corresponding to said image data if said input job number matches said associated job number.

5. The method of Claim 4, wherein:

the storing step includes storing said image data and said associated job number at a host computer, said second network terminal comprising said host computer and a printer;

the step of inputting the local print request message at the second network terminal includes inputting the input job number on the printer user interface; and

20 the comparing step includes comparing at the host interface the input job number with the associated job number.

6. The method of Claim 4, wherein:

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said receiving step includes receiving a password;
the sending the image data step includes sending the password;
the storing step includes storing said password;
the step of inputting the local print request message includes inputting an input
password; and

the comparing step includes comparing the password with the input password and
printing if said input password matches said password.

7. The method of Claim 4, further comprising:

storing an assigned password at the second network terminal;
inputting a local password at said second network terminal; and
comparing the local password with the assigned password, wherein
said step of printing from said second network terminal comprises printing said
document only if said local password matches said assigned password.

8. A secure network print system, comprising:

means for receiving an image data at a first network terminal;
means for producing a print request message at said first network terminal and for
sending said print request message and said image data to a second network terminal;
means for storing in memory said image data and an associated job number at said
second network terminal;
means for sending a reply message to said first network terminal from said second
network terminal, said reply message including said associated job number;
means for displaying said associated job number at said first network terminal;

means for inputting a local print request message at said second network terminal,
said local request message having an input job number; and
means for comparing said input job number with said associated job number and
printing from said second network terminal a document corresponding to said image data if
5 said input job number matches said associated job number.

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ABSTRACT OF THE DISCLOSURE

A method and computer-based printing system enable a user of a computer to send an image file to a host computer and subsequently to a printer for printing while ensuring that the user is able to retrieve the printed document without other individuals having access to the printed document. More particularly, in response to receiving a print request from a user terminal, stores the image data with a unique job number, sends the job number to the terminal computer and this terminal computer displays the job number to the user. The user may then enter the displayed job number and password on an operation unit of any printer selected by the user, and in response, the host computer downloads the stored image data associated with the inputted job number to the selected printer and the selected printer prints the document. Other individuals are prevented from viewing the printed document because only the intended recipient (i.e., the user who originated print job) knows the user's password and job number and because the intended recipient is located at the printer and can "guard" the printed document from being viewed by other people.

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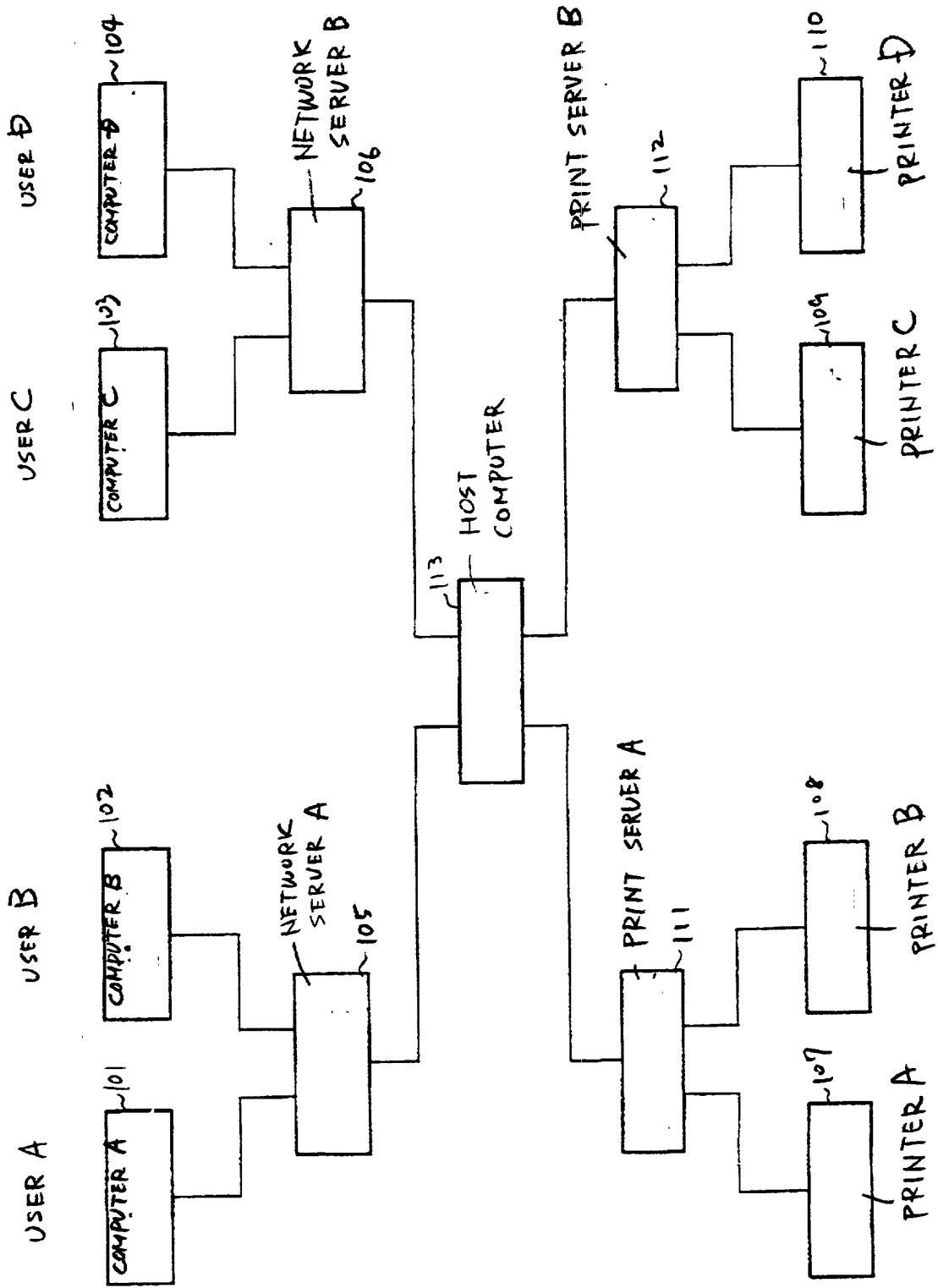


Fig. 1

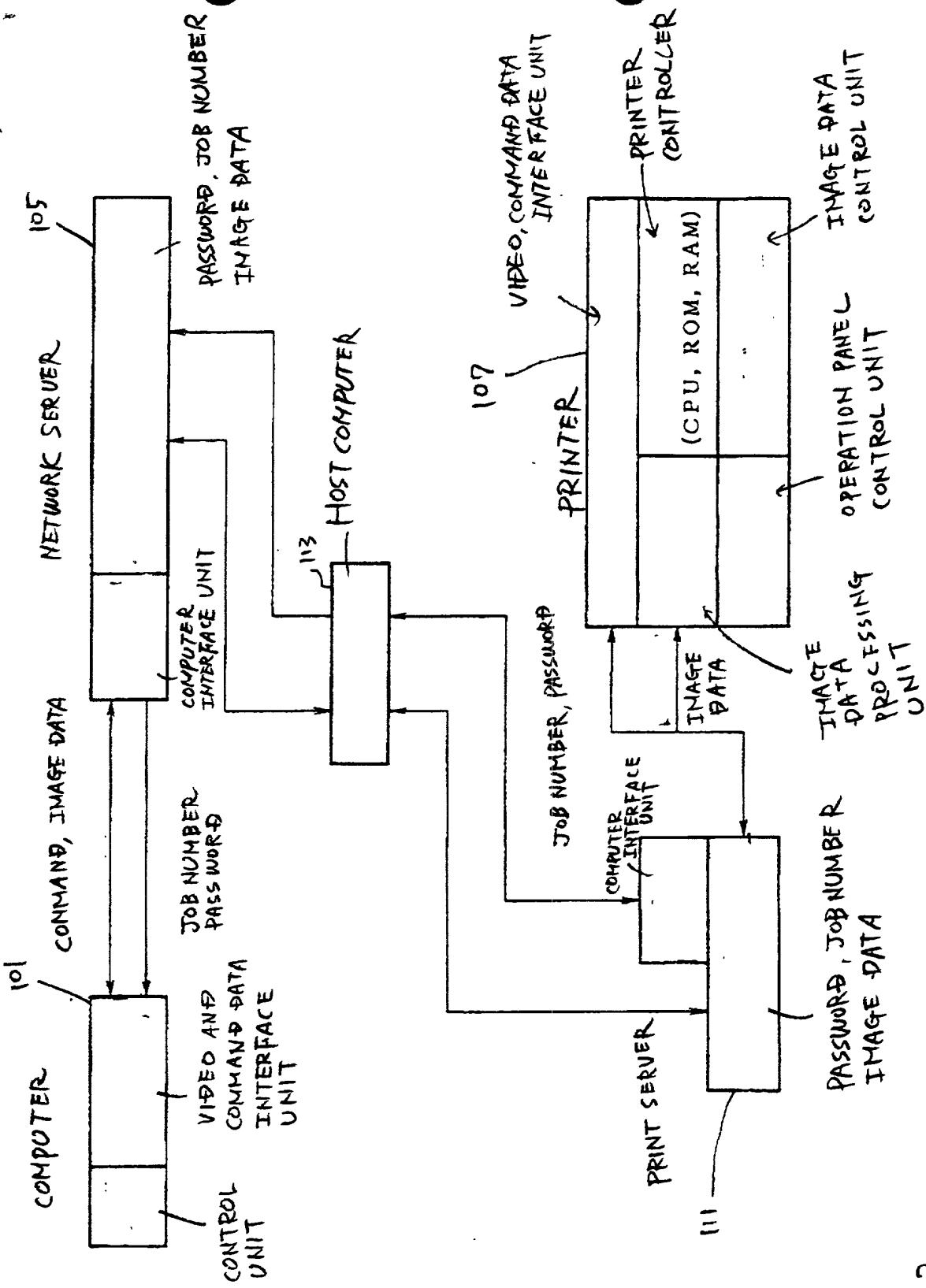


Fig. 2

USER OPERATION
 NETWORK or
 HOST COMPUTER

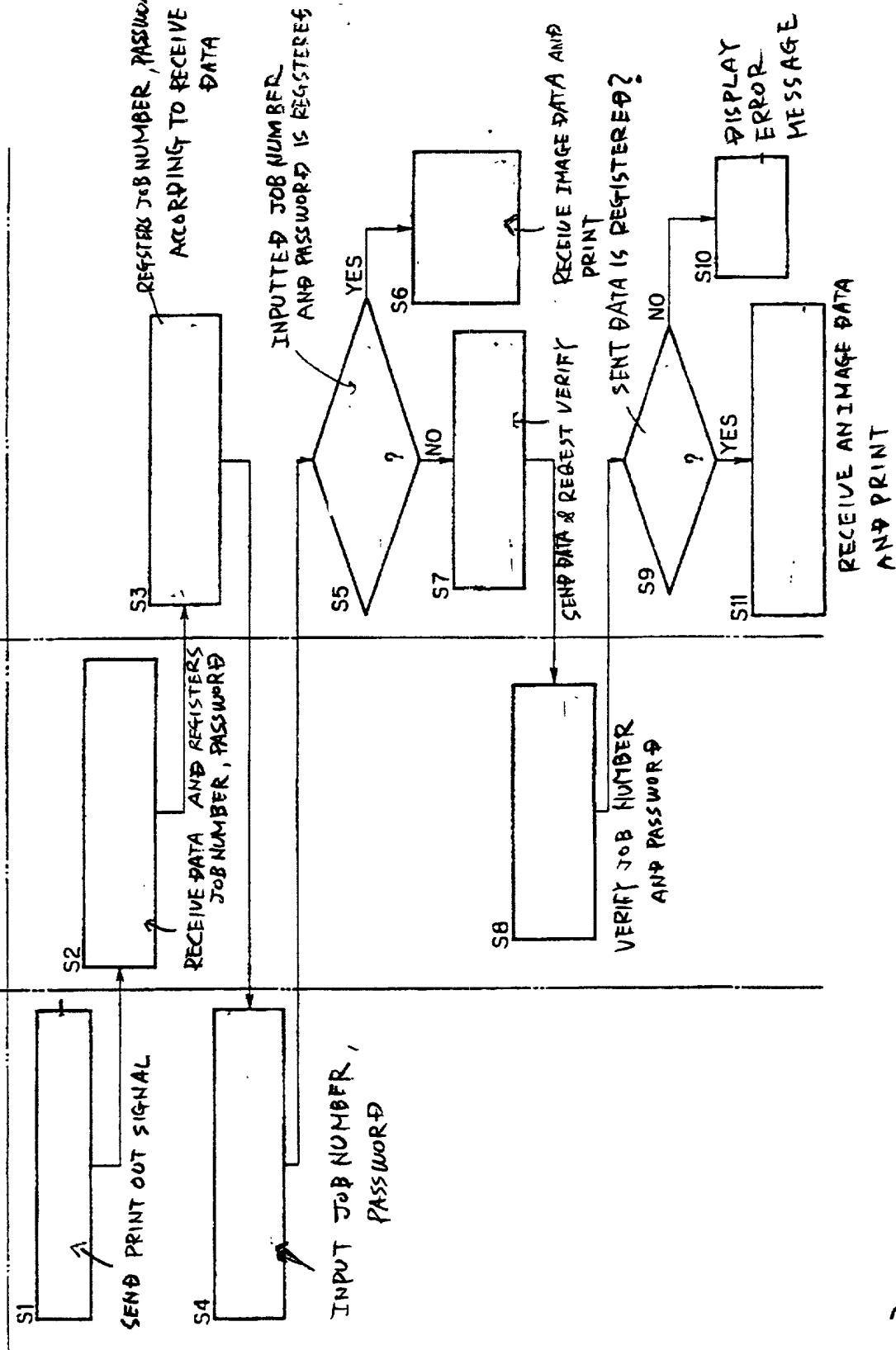


Fig. 3

A circular stamp with the words "C.I.P.E. De" at the top, "J.C. 57" at the bottom, "PATENT & TRADEMARK OFFICE" along the bottom edge, and "SEP 01 1998" in the center.

Declaration and Power of Attorney For Patent Application

特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

As a below named inventor, I hereby declare that:

私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。

My residence, post office address and citizenship are as stated next to my name.

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者（下記の名称が複数の場合）であると信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled,

COMPUTER-BASED NETWORK PRINTING SYSTEM

AND METHOD

the specification of which

is attached hereto.

was filed on FEBRUARY 25, 1998
as United States Application Number or
PCT International Application Number
 and was amended on
 (if applicable).

・私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37編第1条56項に定義されるとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

Japanese Language Declaration
(日本語宣言書)

私は、米国法典第35編119条 (a) - (d) 項又は365条 (b) 項に基づき下記の、米国以外の國の少なくとも一ヵ国を指定する特許協力条約365 (a) 項に基づく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

Prior Foreign Application(s)

外国での先行出願

9-058482 (Number) (番号)	JAPAN (Country) (国名)

私は、第35編米国法典119条 (e) 項に基づいて下記の米国特許出願規定に記載された権利をここに主張いたします。

(Application No.)
(出願番号)

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(Application No.)
(出願番号)

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I hereby claim foreign priority under Title 35, United States Code, Section 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Claimed 優先権主張	
□	□
Yes はい	No いいえ
□	□
Yes はい	No いいえ

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

(Application No.)
(出願番号)

(Filing Date)
(出願日)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.

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(現況 : 特許許可済、係属中、放棄済)

(Status: Patented, Pending, Abandoned)
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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(日本語宣言書)

委任状：私は下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。
(弁護士、または代理人の指名及び登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: (*list name and registration number*)

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